Designing Strategies to Promote Land Stewardship Practices Among Rural Landowners in Washington County

Prepared by
Alex Liebman
Research Assistant
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Center for Urban and Regional Affairs (CURA)
University of Minnesota
330 HHH Center
301--19th Avenue South
Minneapolis, Minnesota 55455
Phone: (612) 625-1551
Fax: (612) 626-0273
E-mail: cura@umn.edu
Web site: http://www.cura.umn.edu

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Alexander Liebman

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Macalester College

CURA
Center for Urban and Regional Affairs
University of Minnesota

Washington Conservation District

Executive Summary:

The purpose of this project was to explore strategies to increase land stewardship among large lot landowners in Washington County, Minnesota. Working with the Washington Conservation District's (WCD) East Metro Water Resource Education Program (EMWREP), I conducted focus group sessions and background research to review and develop potential outreach tools to promote conservation practices. EMWREP has developed programs to diminish non-point source water pollution in suburban and urban areas and the WCD has found success in natural resource management on agricultural lands. However, a gap exists in outreach for rural residential households, mainly ranging from five to 150 acres. While these tracts are not managed for profit, they represent a significant part of the landmass in Washington County. As exurban development trends continue to explode, large-lot landowners will have an increasing influence on countywide soil and water health. We conducted two focus group meetings with rural residents in the county to discuss interests and issues regarding conservation practices. Overwhelmingly, residents were already active in land improvement projects and informed of environmental factors impacting their properties. Residents were mainly interested in invasive species control and halting development that would affect the rural nature of Washington County. Advertising campaigns to link large-lot land management with St. Croix water health were not well received while people responded more positively to developing wildlife habitat and native vegetation in an effort to preserve natural resources. Outreach strategies that stress the broad ecological implications of rural land management will be necessary in shifting from a singular focus on private property and invasive species eradication to a systemic view of conservation.

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Background - Rural Watershed Outreach Program:

The goal of this initiative is to develop community based social marketing strategies that encourage land stewardship among rural Washington County landowners to reduce non-point source water pollution. This program, run by the Washington Conservation District, targets large lot landowners in the EMWREP (East Metro Water Resource Education Program) partner communities. The Washington Conservation District (WCD) provides technical and financial assistance to county residents and watershed organizations to promote the protection of natural resources. The WCD was established in 1942 as part of a national initiative during the 1930s to establish Soil and Water Conservation Districts. Organized along county boundaries, the districts were created largely in response to the havoc and destruction caused by the Dust Bowl, assisting landowners with resource conservation and managing regional conservation programs. The WCD is governed by five elected supervisors and staffed by conservation professionals.[1]

Facilitated by the WCD, EMWREP, created in 2006, is a partnership among an extensive grouping of governments and watershed districts to develop a comprehensive water resource education and outreach program in Washington County and a small part of Ramsey County. Members of EMWREP in 2009 included Brown's Creek, Comfort Lake-Forest Lake, Ramsey-Washington Metro, Rice Creek, South Washington, and Valley Branch Watershed Districts, Lower and Middle St. Croix Watershed Management Organizations, the cities of Cottage Grove, Dellwood, Forest Lake, Lake Elmo, Stillwater,

[1] http://www.mnwcd.org/district_about.php

and Willernie, West Lakeland Township, Washington County and the Washington Conservation District.[2] The mission of EMWREP is to improve the quality of local surface and groundwater resources through education and outreach about non-point source water pollution. The EMWREP region contains seventy major lakes, including White Bear Lake, Forest Lake, Big Marine Lake and Lake Elmo. The St. Croix River, a National Scenic and Recreational River, creates the eastern border and the Mississippi River denotes the southern border. Compared to other communities in the Metro area, the overall water quality is high, yet resources face increasing pressures as the metro population continues to grow.[3] Projects such as EMWREP's Blue Thumb initiative and Storm Water U have targeted homeowners and developers in the suburban and urban areas of Washington County. The WCD has also found success in providing farmers with resources to prevent water pollution. National Resource Conservation Service (NRCS) low interest loans and other statewide initiatives have helped promote the implementation of agricultural best management practices.

Yet, a need exists to develop an EMWREP program that targets Washington County landowners who are neither suburbanites nor production farmers. Large-lot landowners comprise a significant portion of the total land use in Washington County. Abundant natural resources and stream, lake, and river tributaries are found throughout these privately owned properties. As agricultural fields, forests, and grasslands decrease with the rapid growth of the metro area, the development of land stewardship strategies is

[2] Hong, Angie, "East Metro Water Resource Education Program Annual Report," 2009, accessed at: http://www.mnwcd.org/emwrep.php, November 1, 2010.
[3] 2006 East Metro Water Resource Education Plan

essential in preserving Minnesota's natural resources. Despite its proximity to the Twin Cities, Washington County maintains a strong rural character and has abundant natural resources. The health of its rivers, groundwater, and undeveloped land are essential to the county's well being during the 21st century. Strategies to decrease water pollution include the creation of animal habitat, removal of native species, planting of deep-rooted plant species, development of rotational grazing, and creation of bio-retention basins. Upon focus group sessions with rural landowners, we hope to define the major land-use problems among rural landowners and develop a comprehensive marketing package to promote land stewardship. During 2011, EMWREP will focus on specific outreach strategies for the rural lands program.

Development Trends: Nationally, Statewide, and in Washington County

As urban areas in the United States grow and expand, adjacent rural areas experience the encroachment of development. Urbanization nationally and in the Twin Cities is largely characterized by suburbanization, or low-density residential land use.[4] Spatially decentralized housing and business dominate the outer-ring of suburbs surrounding the Twin Cities. In the United States since 1950, exurban development adjacent to metropolitan counties has increased six-fold, nationally.

The Minnesota metro area mirrors these national trends as development has significantly altered the natural landscape. The Twin Cities metropolitan area, a 7,700 square-kilometer seven-county region home to roughly 2.8 million people is projected to top 3.5

[4] Mason, Steven and Marvin Bauer, "Changing Landscapes in the Twin Cities Metropolitan Area," 3.

million people by 2020.[5] Growth has concentrated primarily in middle and outer ring suburbs. Between 1990 and 2000, Minneapolis and St. Paul grew 3.9 and 5.4 percent, respectively, while the total seven-county area grew 15.4 percent.[6] An increase in average lot size has accompanied this rapid urban growth. From 1982 to 1997 the average urban land use per 1000 residents increased from 0.6 square miles to 1.0 square miles. Number and size of households has also increased, as more people move into large, single-family housing units.[7] Growth rate of urbanized land therefore has increased at a much higher rate than population growth. Washington County reflects the seven-county area trend, as the population grew 15.3% from 2000 to 2009, more than double the state average of 7.0%.[8] County census data also demonstrates a change from on-farm to off-farm employment as private development alters the landscape, provides employment alternatives, and removes agricultural land from production, and as an increasing number of non-farming residents move into the county. Private non-farm employment increased 20.5% from 2000 to 2007.

Ecological Issues in Development and Rural Land Use

The infrastructure and increased human traffic in developed areas have significant impacts on the surrounding ecology. The commercial, industrial, and residential developments that accompany urbanization include the expansion of suburbs, increased road density, and the upgrading of roads and other infrastructure. Exurban development

[5] Mason, Steven and Martin Bauer, 3.
[6] Ameregis and Minnesota DNR, "Growth Pressures on Sensitive Natural Areas in DNR's Central Region," 2006.
[7] Dempsey, Dave, "Minnesota Calling," 2006.
[8] Washington County Census Data

mirrors that of urbanization yet on a less spatially concentrated scale. It includes the "construction of resorts, second-homes, vacation cabins, ranchettes, and farmettes…perforating landscapes beyond the urban fringe."[9] Demographic data demonstrates a national trend of migration to rural, amenity-rich locations in tandem with an era of baby-boomer retirement, proliferation of technology, and increased numbers of second homeowners.[10]

The ecological effects of low-density rural development are well documented. Exurban land-use is believed to alter ecological processes to a greater degree than forestry and agriculture.[11] A concentration of human development in places of high flora and fauna biodiversity and natural resources, due to their aesthetic appeal, leads to habitat fragmentation and a decrease in flora and fauna biodiversity. The suppression of natural prairie fires that occurred throughout the plains for millennia has changed species composition and diversity. Less fire tolerant species, including red maple (*Acer rubrum)* have greatly increased, while densities of fire dependent species, including burr oak (*Quercus macrocarpa)* have decreased. Animals are also influenced by changes in fire regime. In ecological restoration experiments in Arizona, fire treatments of forest ecosystems doubled butterfly diversity and increased total abundance fivefold.[12] Human development largely restricts the re-adoption of fire as a management strategy for natural ecosystems, except on test plots and small scales.

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[9] Theobald, David M., et. al., 1906.
[10] McGranahan, D.A. "Natural Amenities Drive Rural Population Change,"1999.
[11] Hansen, Andrew J., et. al., 1894.
[12] Donovan, Geoffrey H. and Thomas C. Brown, 73.

Examples abound of native species declining along the rural-urban gradient in response to environmental and non-native species pressures. Plant and animal communities often become dominated by "suburban adaptables", capable of functioning in landscapes with moderate development.[13] Fragmentation due to the division of contiguous tracts of land into private settlements can interfere with many of the life history cycles essential to flora and fauna survival, including mating territory, migration, and pollination. The Minnesota Campaign for Conservation pamphlet highlights the danger of encroachment of developed areas on the isolation of public recreation lands, specifically in Washington County. The Bayport Wildlife Management Area (WMA) and the St. Croix Savannah Scientific and Natural Area (SNA), areas of great ecological importance also managed for hunting and recreation, face imminent pressure from development on all sides, limiting the opportunities for recreation and the health of the natural habitats.[14] See figure 1 in the appendix to visualize the increased residential development the county is expected to see by 2020 and its implications for wild land habitats.

In specific interest to EMWREP's goals of decreasing pollution from run-off, exurban development results in higher amounts of impervious surface, causing drastic effects on ecological processes. These include more frequent flooding and higher flood levels and increases in nitrogen, phosphorous, and sedimentation levels in water bodies.[15] In Minnesota, lakeshore development and subsequent decline in water quality reflects this relationship. Studies demonstrate that significant changes to abundance and diversity of

[13] Hansen, Andrew J. et. al., 1898.
[14] Dempsey, Dave, 29.
[15] Hansen, Andrew J., et. al., 1902

"everything from algae to invertebrates to fishes in urban streams…can occur even at fairly low levels of urbanization, frequently beginning when 10-15% of the watershed has become urbanized or converted to impervious surface cover."[16] Characteristic to other urbanized and agricultural landscapes, Washington County has issues with high amounts of phosphorous run-off. Jay Riggs, district manager of the WCD commented, "suburban run-off is not very different from run-off of a cornfield, both are high volume and high in nutrients."[17] A University of Minnesota and St. Croix Watershed Research Station study analyzed sediment cores from Lake St. Croix, a body of water that receives water from the entire basin. It concluded that early settlement activities including logging and conversion of undeveloped land to agricultural uses from 1850-1890 had small impacts on phosphorous loading. Yet, by the mid-1900s, scientists found major increases in sediment and phosphorous levels, indicating that more recent development patterns are responsible.[18] As figure 2 (see appendix) demonstrates, the environmental pressures largely due to population growth will increase, as population rises rapidly in Washington County and other adjacent counties to the St. Croix river basin.

Implication of Private Land Holdings for Conservation Efforts

The transfer of land into a vast array of private holdings place conservation measures largely in the hands of landowners. While agriculture is a large source of pollution, many conservation measures are intrinsically tied to farm profitability. Conservation tillage and cover cropping can increase yields and benefit soil health while decreasing erosion.

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[16] Riley, Seth P.D., 1895
[17] Riggs, Jay. Interview, Oct, 5, 2010.
[18] St. Croix Basin Water Resources Planning Team. *St. Croix Basin Phosphorous-Based Water-Quality Goals*, 4.

Large landowners that are not farmers therefore have a different set of responsibilities and options of conservation. Yet, as "property rights are increasingly juxtaposed with stewardship responsibilities, the need to blend public and private land management efforts has become increasingly important."[19] The environmental issues and management strategies on large tracts of privately owned land in Washington County have significant implications for overall water and soil quality.

Different people highlighted political and social barriers to the success of land stewardship. Ron Struss, pesticide adviser of the Minnesota Department of Agriculture noted the libertarian politics of Washington County as a possible obstacle, stating the county "…has a libertarian history, one of the more wealthy counties in the state where one can own twenty acres and a large house. There is an attitude that government should do basic services. This bleeds into attitudes about conservation programs."[20] Melissa Lewis, board conservationist of the Minnesota Board of Water and Soil Resources, discussed the differences in attitudes surrounding property rights between Norway and the United States. In Norway, all the land is open unless specifically posted. Norwegians also became very protective of maintaining farmland during the beginning of the 20th century, constructing houses on knolls and bedrock. In America, rural gun culture and private property rights trump all, even if the private decisions have a large impact on others.[21] Both stressed the difficulties in developing a rural land ethic among private owners that would promote conservation efforts.

[19] Daley, Salinda S., et. al., 210.
[20] Struss, Ron. Interview, Sep. 23, 2010.
[21] Lewis, Melissa. Interview, Sep. 23, 2010.

Strategies for Land Stewardship Education and Implementation

We approached our goal of educating rural landowners about conservation issues and promoting land stewardship practices largely through the lens of community based social marketing. In this approach, developed by environmental psychologist Doug McKenzie-Mohr, "promoters identify the activity to be promoted and the barriers to this activity and then design a strategy to overcome these barriers, using psychological knowledge regarding behavior change."[22] These outreach strategies have been essential in the development of previous EMWREP projects, including the Blue Thumb Program, the MS4 Toolkit and Storm Water U.[23] Highlighting that the cornerstone of sustainability is behavior change, McKenzie-Mohr promotes a program that is more involved and effective than the classic strategies of increasing public knowledge and cultivating attitudes that support desired activities. In many cases, massive education campaigns led to relatively little conservation actions, resulting in huge financial losses.[24] A community based approach "requires that community partners become active participants in setting goals" ensuring more responsibility and ownership of the specific project.[25]

In an extensive study of conservation practices by rural landowners in Australia, a group of economists, psychologists, and sociologists, combined to discuss their studies of adoption practices across disciplines. They point to several areas that challenge the success of conservation and essential strategies for adoption. Early on in the process, subjective perceptions and expectations often outweigh objective truth and adoption

[22] McKenzie-Mohr, Doug, 531.
[23] Hong, Angie, 5.
[24] Doug McKenzie-Mohr and William Smith, 12.
[25] Flocks, Joan, et. al., 462.

depends on the landholder expecting the proposed project will allow them to achieve their goals. These goals may be environmental, but are also often social and economic. Financial status and familial and community situations may outweigh focuses on conservation. It is important for the outreach worker to acknowledge the overlapping of these goals as well as the historical, cultural, and personal influences landowners may have upon adoption decisions. As some conservation practices are complex, operate on large temporal scales, and results are often intangible, influencing adoption can be very difficult. The authors state the need to demonstrate the potential for success in trials and the need for projects to appear surmountable. This is a large reason for our interest in conducting focus groups as… "If a practice is not adoptable in the long term, it is because landholders are not convinced that it advances their goals sufficiently to outweigh their costs…Extension providers should invest time and resources in attempting to ascertain whether an innovation is adoptable *before* proceeding with extension to promote its uptakes."[26]

For our specific focus groups we separated our objectives into three steps:

1. Identifying Areas of Behavioral Change: We asked questions regarding general land use trends, acreage, and specific environmental issues. We also asked about general likes, dislikes, and concerns about the land.

2. Identifying Barriers and Benefits: We attempted to identify the challenges people faced in implementing land stewardship practices. We wanted to know previous projects people had worked on and things they would like to see changed. Also we explored

[26] Pannell, David J. et. al., 16.

particular incentives that would promote conservation projects including access to professional expertise and financial help.

3. Designing Programs: We presented various images of land practices and potential postcard images designed to generate interest in conservation. People commented on the applicability and potential effectiveness of these ideas.

In coming months, trials and evaluations of the outreach strategies will be conducted to assess the potential successes of certain approaches.

Selection of Focus Groups

We selected target groups based on geographical distribution, land size distribution and proximity to areas of possible contamination. We wanted to target non-agricultural landowners with more than five acres. Using randomized parcel data accessed by the WCD, we contacted people from the Brown's Creek Watershed District, the Comfort Lake-Forest Lake Watershed District, and residents in the Afton and Denmark township regions of the southeast part of the county. Participation was therefore voluntary. We do not feel this strongly biases our results, as use of Washington Conservation District services is inherently voluntary. Also, in seeking ways to increase land stewardship practices, it is very informative to discuss the strategies with residents who already have an interest in their personal land.

The Afton/Denmark region has properties that abut directly or drain through tributaries into the St. Croix River. Also, the WCD has received funding to develop a "Top 50 P"

project in the greater Afton area in 2011. The project is a "focused effort to identify, implement, and assess the prioritized phosphorous reduction practices in rural areas directly tributary to Lake St. Croix."[27] This initial focus meeting will be an attempt to assess the opinions of rural residents regarding land stewardship practices and possible problematic areas in the area.

The BWCD and CLFLWD regions are located in the central and north-central parts of Washington County, respectively. See figure 4 in appendix for map. Both watershed districts have "hotspot" priority areas that have been identified as areas necessitating increased conservation efforts in coming years. This area also has an extensive amount of large, privately owned parcels not under agricultural production. The spatial distance from the Afton group may inform us of varying opinions and issues in the county based on geographical difference.

Results of Focus Groups

Afton

We conducted our first focus group with 9 people in the Afton/Denmark area of southeastern Washington County on November 15, 2010 at the Afton City Hall. Nine people came to the meeting, 5 females and 4 males including one married couple. As the couple recorded the same demographic information and relayed mutual opinions regarding their land, they will appear as one person in the analysis and summary of the meeting presented below.

[27] Riggs, Jay, "Fixing the Top 50 Rural Nonpoint Phosphorous Sources", 2010.

Demographic results

The average age was between 55-64 years (6 people), while all participants ranged from 35 to over 65. The distribution of total household income spread a larger range, with 3 households earning $50,000 - $75000, 1 household each earning $75,000 - $100,000, $100,000 - $150,000, $200,000 - 250,000, and 2 households earning $250,000 or more. The group was very well educated, as all attendees had received at least their high school diploma. One person had completed an associates degree, two people a bachelor's degree, and six people had achieved a master's degree or higher.

All attendees were the primary owners of their land. Most people lived on their land instead of renting (7 out of 8), although one person lived on part of her parcel while renting the remainder for corn and soybean production. Characteristic of our predictions regarding the large-lot target population, 6 of 8 received no income from their land, while one person received 0%-25% of their total annual income from their parcel and one person received 25%-50% of their total annual income from their land. Lastly, 5 of 8 attendees had lived in Washington County over 20 years, while one attendee each had lived in the county 2-5 years, 11-15 years, and 16-20 years. For survey results, see appendix.

Land Issues

Participants owned land ranging from 7 to 80 acres. The most common concern and the main focus of the meeting centered upon the invasion of buckthorn (*Rhamnus cathartica*) and management strategies. Buckthorn, native to Europe, was introduced as an

ornamental shrub in the early 1880s, quickly naturalizing throughout the upper Midwest and Northeast. A combination of advantageous physiological traits, including "shade tolerance, rapid growth, high photosynthetic rates, a wide tolerance of moisture and drought, and an unusual phenology" give buckthorn a distinct advantage in the environments it invades.[28] Its dominance, in tandem with rising deer and earthworm populations, has decreased woodland biodiversity, especially in the herbaceous layer. These factors are also documented to inhibit tree seedling germination. All attendees had previously spent time and money on buckthorn control with varying degrees of success.

A smaller amount of attendees voiced concerns regarding the changing forest composition. The decline of large oak trees (*Quercus spp.*) and cherry trees (*Prunus spp*.) with the accompanying rise in red maple (*Acer rubrum)* and buckthorn alarmed participants. A common observation was also the appearance of the forest as less dense. One participant cited additional weed problems, stating, "bittersweet weed (*Solanum dulcamara)* is far worse a problem than buckthorn." While buckthorn dominated the conversation, participants were also receptive of larger-scale changes in their land.

Lastly, a few people commented on water issues. Erosion was a problem on some parcels, especially around the Kelle's Coulee stream area and in other drainage creeks to the St. Croix River. One of the attendee's portions of Kelle's Coulee abuts corn and soybean fields that she cited as a main source for high sediment run-off. Kelle's Coulee is of considerable importance for Washington County, as the Afton Natural Resources

[28] Knight, Kathleen S. et. al., 925.

Inventory and Stewardship Plan Natural Community Evaluation of 2001 identified the stream as the most important and highest quality natural area within the City of Afton.[29] Please see figure 3 in the appendix, for the precise geographical location of Kelle's Cooley in Afton. A study of the stream, conducted in 2007, highlighted community concerns regarding the stream, citing possible negative impacts due to increased road paving projects, development pressures from Metro Area growth, agricultural non-point source pollution, and erosion from destabilized areas of the stream bank.[30] As there is broad, well-established interest in maintaining the water quality of the stream, this appears to be a good area in which a rural land stewardship initiative may find considerable success.

A few attendees highlighted the expansion of the greater Woodbury area as a concern, especially in relation to groundwater. One participant noted that her "well dried up after the installation of the Woodbury water tower." Her new well has iron problems that previously not an issue, and she stated her neighbors have also been complaining. While it did not dominate the discussion, water management in relation to different types of land use appeared to be of immediate interest to several participants.

Positive Aspects of Being a Large-Lot, Rural Landowner

Participants overwhelmingly highlighted the proximity to woodland habitats as their main reason for living in the Afton/Denmark area of Washington County. A participant expressed a common sentiment, stating, "I have seven acres with a house right in the

[29] Emmons and Olivier Resources, Inc, 22.
[30] Emmons and Olivier Resources, Inc., 34.

middle. I only see my neighbors in the winter." Another participant liked her large tract land for the hunting opportunities it offered. This allure of rural peace, quiet, and adventure while living in relative proximity to the Twin Cities appeared far more important than access to the St. Croix River for recreation.

Landowners viewed animal habitat as a vital part of their parcels. Participants mutually enjoyed the bluebirds, pheasants, and owls while the influx of turkey and deer populations caused alarm. Many linked changing fauna populations to alterations in flora. One noted the simultaneous explosion of deer and buckthorn in the mid-1970s. Some thought removing the dense buckthorn understory would improve wildlife habitat, stating, "Removing buckthorn will improve land for wildlife in the area. There will be more food and ground cover. Also, humans will benefit because animals are less likely to bolt if they are able to see the disturbance." The possibility for promoting land stewardship based in the creation of wildlife habitat appears strong due to the collective interest among participants.

Barriers for Implementation of Land Stewardship Strategies

Financial resources, time, and education regarding specific practices emerged as larger obstacles for conservation practices than apathy or ignorance surrounding environmental issues. As highlighted above, participants wanted more strategies and resources for eradicating buckthorn from their properties. Ideas circulated around cost-share programs for buckthorn chemical treatments and labor help for removal. Reforestation after eradication was also important. As many landowners owned more than twenty acres,

they cited a large subsidy for tree seedlings as important for re-planting many acres. Many wanted more information on the WCD tree seedling program. One participant wanted to establish vegetation of the native oak-savannah habitat on their land but was having problems finding appropriate consultation in how to approach this project. Similarly, one had re-established a prairie with native grasses upon her land, but found its quality decreasing due to her inability to burn the area and her discomfort mowing regularly as she became older.

Although the group saw their management efforts as representative of the surrounding population, the apathy of neighbors approach to invasive species and poorly managed public areas frustrated many participants in their personal attempt to tackle buckthorn. Pointing to the high germination rates of buckthorn seed, they saw the eradication challenge as impossible if a unified front against the plant did not emerge. One participant thought that a group should lobby Xcel Energy and other energy companies to eradicate buckthorn underneath power lines, where they had, in prior years done a poor job. Attendees echoed similar sentiments regarding buckthorn in public spaces in the county, including Afton State Park and Lake Elmo Park Reserve. In many cases, participants acknowledged that money and time spent on invasive species management simply does not take priority over other pressing matters, including house payments and maintenance, food, energy bills, and financing their children's education.

Lastly, a smaller group of participants wanted help in erosion control. The Kelle's Coulee contingent wanted help tackling the erosion problems in their area. They had

contacted the county and NRCS (National Resources Conservation Service) but there was still "no planning for run-off, no holding pond on the street." Another landowner with a small creek draining to the St. Croix wanted help in controlling the run-off during spring floods.

Outreach Strategies

Woods: Participants displayed minimal interest in planting profitable trees as a way to establish native species and wildlife habitat. One person already had three acres planted in orchard but there seemed to be a general lack of desire to implement this idea on their own land.

Water Access: Participants displayed almost no interest or comprehension of how an advertising campaign surrounding the merits of the St. Croix would improve land stewardship. Most people did not have land close to the river and were more concerned about the health of their hardwood forests. Many explicitly stated the quiet of the forest as a primary reason for their residences, in direct opposition to the busy bustle of the St. Croix River.

Wildlife Habitat: Land stewardship strategies with an advertising campaign based in the creation and management of wildlife habitat received the most positive reception among attendees. Specifically, people liked the "blue birds" outreach idea. Yet, participants also highlighted that the extent of this idea was limited due to their distance from water resources.

Conclusion

Participants seemed well versed regarding land stewardship practices on their land. The awareness of and attempts to eradicate buckthorn highlight this environmental consciousness present among attendees. Five of eight people had worked with county, state, and/or national agencies to develop management strategies on their land. The most common sentiment, voiced by one participant was, "convincing people about the value of conservation is not needed. Help people with logistical concerns. 90% of people are out here because they understand environmental concerns and like to live in the woods." To notify rural landowners about conservation initiatives, new programs, or funding options, they suggested calling homes. Participants also stated the Afton City newsletter is a widely read resource for notification of area happenings.

The intense interest in buckthorn is worthy of some discussion. Passionate interest in buckthorn eradication is useful in attempts to maintain native vegetation, generate awareness regarding other invasive species, and may spread to interests in other pressing environmental issues. Yet, in the attempt to create strategies for a myriad of land stewardship projects (water quality, erosion control, wildlife management, native species management), it is important to frame "invasive species as one of a number of human impacts that should be examined and prioritized relative to other impacts of management possibilities."[31] Complete eradication may be impossible or demand too high an amount of resources in comparison to other management strategies or other conservation initiatives. As participants cited time and money among their biggest obstacles in

[31] Hornbach, Dan. E-mail to author. 23 November 2010

controlling buckthorn, is invasive species management the best allocation for these resources?

Numerous lessons from agriculture can give insight into the management of buckthorn in Washington County. First, chemical containment of weeds in croplands has produced surface and groundwater contamination and side effects on nearby plant and animal species in abutting ecosystems. Chemical management has led to an influx of herbicide resistant weeds, providing additional challenges for eradication. Also, "by maintaining the focus on weed removal without addressing the role of disturbance and resource availability, control practices have ignored the very conditions which weeds are particularly well adapted to exploit."[32] While buckthorn control, in theory, seems like a responsible practice, the dependence on toxic chemicals and/or intense soil alteration is worthy of analysis. The parallels between agricultural run-off and the possibility of chemical run-off into water resources during buckthorn removal demands more formal insight. Lessons from agriculture may inform a more complex, systems approach to land stewardship, as, "Management decisions should…incorporate cost-benefit analyses, weighing the potential impacts of the non-native species against the costs and impacts of the management practices themselves." [33] The challenge for conservation districts seems to be harnessing the energy surrounding buckthorn removal to promote a land stewardship plan that is multi-faceted, economically viable, and promotes the overall ecological health and biodiversity of the county.

[32] Smith, Richard G., et. al., 430.
[33] Smith Richard G., et, al., 434.

Scandia

We conducted our second focus group meeting with four people from the BWCD/CLFLWD area of north-central Washington County on December 7, 2010 at the Scandia Community Center. Two males and two females were in attendance, including an unmarried male and female that jointly owned one tract of land. As they are unmarried and represented varying views, they will appear separately in the analysis and summary of the meeting presented below. While this group was significantly smaller than the Afton group, we believed the opinions regarding rural land ownership and issues regarding stewardship are valuable in assessing outreach strategies. Also, as the nature of this study was voluntary, we do not believe it skews the reliability of our research.

Demographic results

Three out of four participants were between 55-64 years, and one was 45-54 years. Two attendees earned between 100,000 and 150,000 dollars annually, one earned 25,000 - 50,000 dollars, and one did not respond to the question. The group was well educated, as all attendees had received at least their high school diploma. One had completed an associate's degree, two a bachelor's degree, and one had completed a master's degree or higher.

While all attendees owned their land, only one lived on their property, receiving no income from the land. One rented their parcel, receiving 75-100% of their income from the agreement. The male and female did not live on their shared property but also received no income from their land. Lastly, 3 out of 4 attendees had lived in Washington

County at least 20 years. The fourth, while owning property in Washington County, lived in a neighboring county. For survey results, see appendix.

Land Issues

Participants owned land of 10, 40, and 100 acres. The most prominent concern was encroaching development and the stance of government on rural landowner interests. One felt that, upon observing the trends in neighboring Chisago County, suburban development in northern Washington County was inevitable, commenting, "It is going to come, but what should we do about it? We are starting to see change. There is no discrimination against rural people, but what about the future?" Another felt that that county government had been harsh towards his decision to not develop his land, keeping it for solely recreation. After paving the road adjacent to his land and negating his desire to build an all terrain vehicle storage building instead of a habitable structure on the land, the property owner felt extremely discouraged. He thought that the county did not accept rural, undeveloped property into their model for land management. Similarly, all participants worried that the exclusive use of septic plumbing systems and wells for drinking water could be compromised by suburban development. Increased water demand or contamination could damage the system. As one participant said, "Well water is very important in Grant. We don't want to pay for it to be piped out." All attendees disliked the high property taxes and worried these would only increase as development increased in Washington County.

Participants viewed buckthorn as a pest, some spending significant time, labor, and chemicals for eradication. They highlighted how buckthorn changes forest composition,

"drowning everything else out." Other invasive species were causes of concern, including purple loosestrife (*Lythrum salicaria*) and the narrowleaf cattail (*Typha angustifolia*). A growing number of coyotes aroused alarm. Grievances combined the purely emotional and specific worries about the implications for horses and household pets. Water and soil issues had a very small role in the meeting. Both the undeveloped tract and rented farmland parcel reported no issues or good drainage systems already in place. The residential parcel did not state particular run-off or erosion points on their land.

Positive Aspects of Being a Large-Lot, Rural Landowner

Above all, participants pointed to the rural nature of northern Washington County when describing their affinity for their parcels. One stated, "There is a rural expectation and privacy. Neighbors can do what they want. You can do what you want." Another participant's primary purpose for their land was, "to sit in the middle and pretend to be away from things." Hunting and outdoors recreation were other enjoyable parts of the properties. An attendee described being surrounded on all sides by horse owners and, while she was not an owner, enjoyed the "horse camaraderie".

A few participants viewed their parcels as long-term investments, not to be developed. Farmed or wild, they reacted positively to the undeveloped, large tracts of land. One participant felt strongly that his land was intrinsically tied to the greater health of Washington County stating, "everything goes into the St. Croix, we have to be looking at that stuff…" As stated above, they felt that this type of land-use was fleeting in the face of increased development.

Barriers for Implementation of Land Stewardship Strategies

While time and money were discussed as barriers, a lack of knowledge of existing programs and general mistrust of governmental agencies arose as the largest challenges in involving Washington Conservation District in the implementation of land stewardship strategies. Questions in this period of the meeting were: Are there resources to help tree planting? What is going to live? How do we manage prairie restorations? Participants were interested in assessment visits and information on grants and funding possibilities for projects. One participant reported that while outreach was critical, "getting people to read things that they get in the mail is very difficult."

Some thought themselves and fellow residents to be too skeptical of the government to ask for assistance from the WCD. One stated they would "have more faith in Ducks Unlimited" initiating a project than the government. Too much infringement on personal property rights had led to an overarching critical sentiment towards public help. Also, acreage size could create large differences in how people contextualized their properties. People on large lots were familiar with "farms, manure, woods" while people with five acres thought they "still lived in the city." Government programs that catered to suburbanites might be inapplicable for larger lot owners.

Outreach Strategies

Woods: Participants responded positively to the strategy of planting profitable trees as a method to establish native species and wildlife habitat. One participant was not interested personally but thought it a good idea and was aware that her neighbors had

planted orchards in recent years. Another attendee saw trees as an excellent long term, rotational crop.

Water Access: Attendees displayed little to no interest in the promotion of water recreation in the St. Croix as a suitable strategy to promote land stewardship practices.

Wildlife Habitat: Participants reacted with collective agreement to the idea of using restoration and/or creation of wildlife habitat to protect water and soil resources. The Blue Birds initiative received popular support. Attendees thought this strategy would be likely to garnish more widespread support throughout the county.

Conclusion

Similar to the Afton group, the participants in Scandia displayed established interest in their properties. Yet, concerns were focused on development and governmental control rather than invasive species. This difference is not surprising considering the rapid growth currently occurring in Washington County and the conversion of former agricultural fields and woodlands to residential areas. Residents were less involved in controlling the flora on their properties, but this may be due to larger and non-residential tracts of land. While we may not be able to extrapolate this finding to a larger audience, it does have implications for outreach. Large properties, despite being privately owned, can heavily influence the soil and water quality throughout the county.

An interesting juxtaposition arose in the meeting, that, although participants reveled in the private and independence of rural living, all had a general consensus that a larger community land ethic needed to be cultivated. While community accountability is an essential part of the community based social marketing strategy, it becomes exceedingly

hard to practice on large, disparate, private tracts of land. Ron Struss described driving through Iowa for miles, passing different farms all practicing conservation practices. A few miles later, the trend switched, as farms seemed to be devoid of even the simplest grassed waterway. Commented Struss on the land management differences and outreach, "It comes down to a person, a certain conservationist, an advocate, who has been around long enough to develop personal relationships. It comes down to a person who has the courage to challenge norms and has been around long enough to have credibility."[34] Outreach for rural, private residential and recreational lots could derive these lessons from agricultural conservation outreach. Specific community members who have lived in Washington County an extensive amount of time, are greatly admired and trusted, and interested in conservation activities, could be identified and employed for outreach. In the same interview, Ron Struss commented on the challenges for government programs that seem especially relevant in light of the sentiments voiced in the meeting. Although the bias against government exists, it can "sometimes be overcome through person to person contact and a common goal to improve the community. Once they get to know a certain person, the group is not so bad." Although costly and time-consuming, individual communication may be an effective strategy at promoting conservation among rural landowners.

Mailings and an advertising campaign might generate additional interest in land stewardship but these do not seem to be the most effective strategies in influencing rural, large-lot landowners. Rather, personal contact with trusted community members may be

[34] Struss, Ron. Interview, Sep. 23, 2010.

the best outreach for the WCD to employ. Despite isolated opinions that see private holdings as part of larger land issues in Washington County, both focus meetings highlight the work that needs to be done to create an improved rural land ethic and systemic view of the county's natural resources. Despite the large tracts of land owned by participants in both groups, they are primarily viewed as extensions of personal, controlled, residential space. It will be increasingly important to contextualize invasive species and development issues on county, state, and national scales, rather than focusing on single properties. Such systems-based thinking will hopefully improve land stewardship practices and, hence, the health of water and soil in Washington County.

Conclusion

The need exists to develop a more comprehensive land management outreach program for rural, non-agricultural landowners. While rural Washington County residents appear to be already involved in managing their land, there is a lack of focused initiatives that address the overall health of natural resources in the county. Through improved outreach, EMWREP could develop appropriate programs that properly address the needs and concerns of large-lot landowners. The cost-effectiveness of broad advertising campaigns versus the influence of individual property visits must be weighed. Trials should be conducted on population subsets to see how rural landowners respond to different types of outreach. Most likely, the successful development of improved land stewardship practices will depend on multiple outreach strategies working in tandem.

Significant work, including more focus groups, must continue to identify appropriate marketing techniques for rural landowners and potential incentives that could reduce barriers to implementing conservation projects. The construction and promotion of a rural land ethic that ensures sustainably managed natural resources faces serious challenges in the face of increased suburban and ex-urban development in Washington County. The private culture, removal from economic agricultural production, and distance from neighbors poses difficulties in organizing community support for stewardship practices. Yet as the percentage of privately owned land increases, these owners will play a significantly important role in conservation. While using invasive species as a hook to engage people in larger conservation projects is useful, singular focus on buckthorn may be detrimental to the development of a holistic management plan that addresses the health of the county's plants, soil, and water resources. Although buckthorn decreases flora and fauna biodiversity, conservation projects should incorporate cost-benefit analysis to weigh the impact of buckthorn control versus the impact of other management strategies. Effective stewardship must meld a wide array of projects, including invasive species control.

On a larger scale, increased development in Washington County ultimately poses a greater threat than the stewardship activities on individual properties. Scientific models clearly demonstrate the ecological impacts of rural residential development upon flora and fauna diversity and water health. Yet the effects of individual properties are more difficult to measure and quantify. Management challenges arise as "The aggregate effect of land-use change is the result of many, relatively small individual decisions that are

diffuse in space and time, made by a diverse array of planners and policymakers - an ecological form of 'the tyranny of small decisions.' " [35] In tandem with conservation efforts, development trends must be critically evaluated on local, regional, and national levels to ensure the longevity and vitality of the area's natural resources.

The quality of the woodland as an extension of private, residential space seems to be the most important land concern for county residents. Land profitability and corresponding water quality in nearby rivers did not generate enthusiasm for stewardship initiatives. A broad advertising campaign could stimulate discussions regarding the interconnectedness of wildlife habitat, invasive species and water quality. Work will be needed in developing slogans, logos, and the correct media in which to relay these messages. Through this work, the WCD may be able to overcome the stigma surrounding government-based projects. A delicate balance must be achieved between inaction and brashness when working with an already skeptical population. Despite the difficulties in developing systemic strategies for land stewardship among rural landowners, increasing ex-urban development and water pollution necessitate rapid and effective action.

[35] Theobold, et. al., 1908.

Appendix

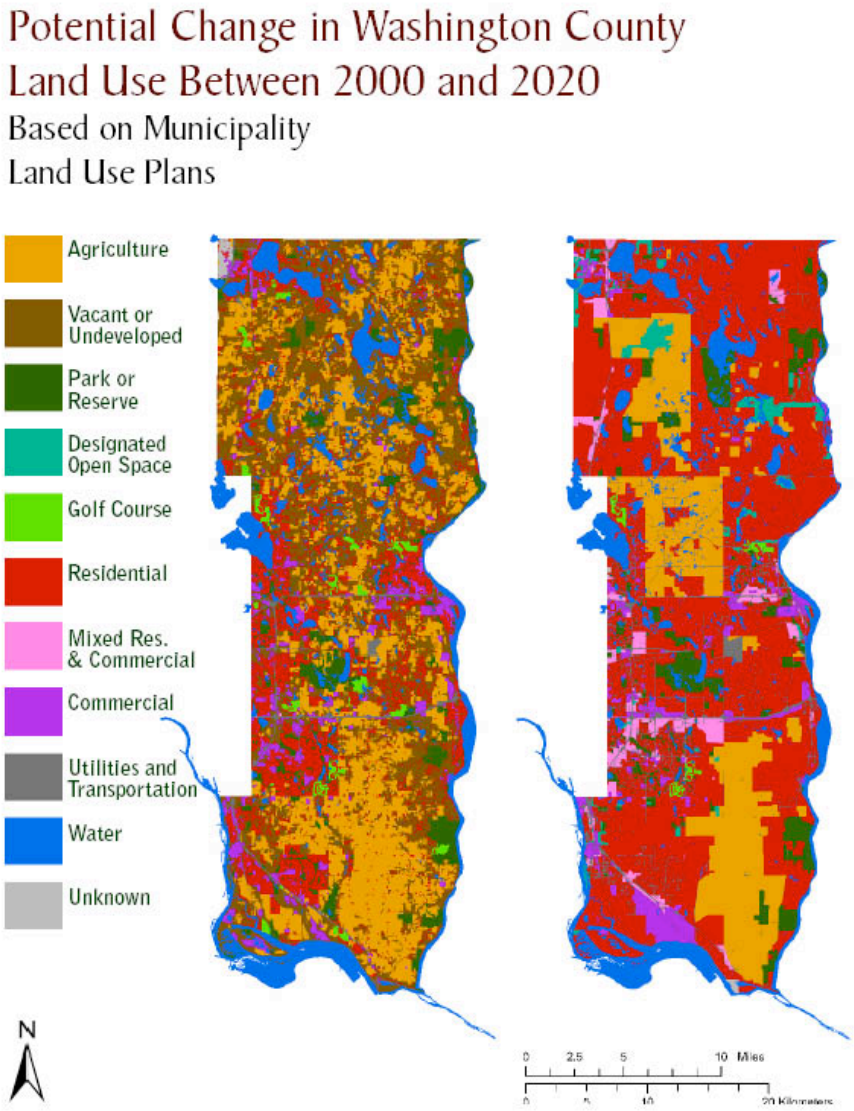

Fig. 1 [36]

[36] http://www.socsci.umn.edu/~trex0003/webimages/LU_compare.jpg

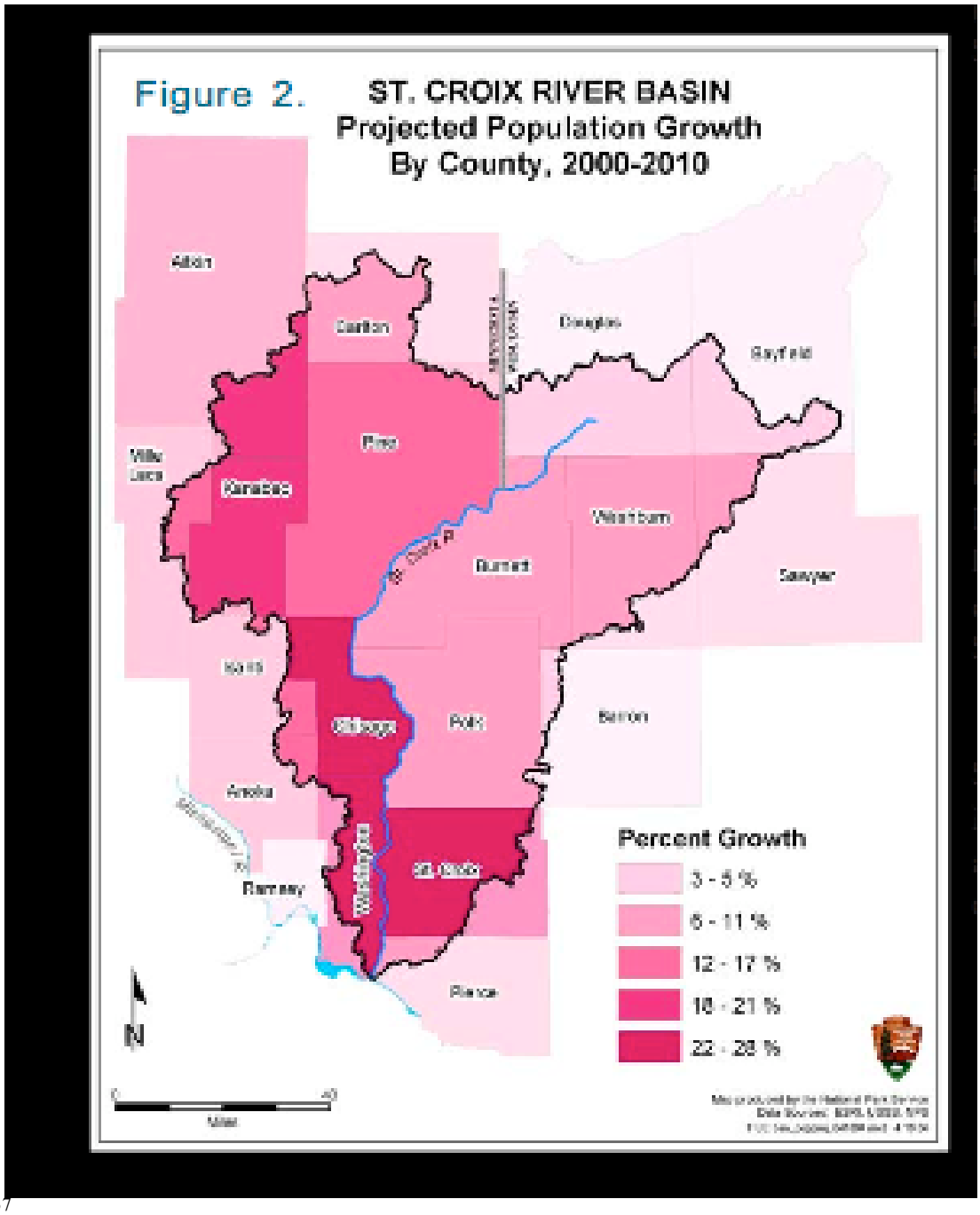

Fig. 2[37]

[37] St. Croix Basin Water Resources Planning Team. *St. Croix Basin Phosphorous-Based Water-Quality Goals*, by Pamela J. Davis. August 2004, 3.

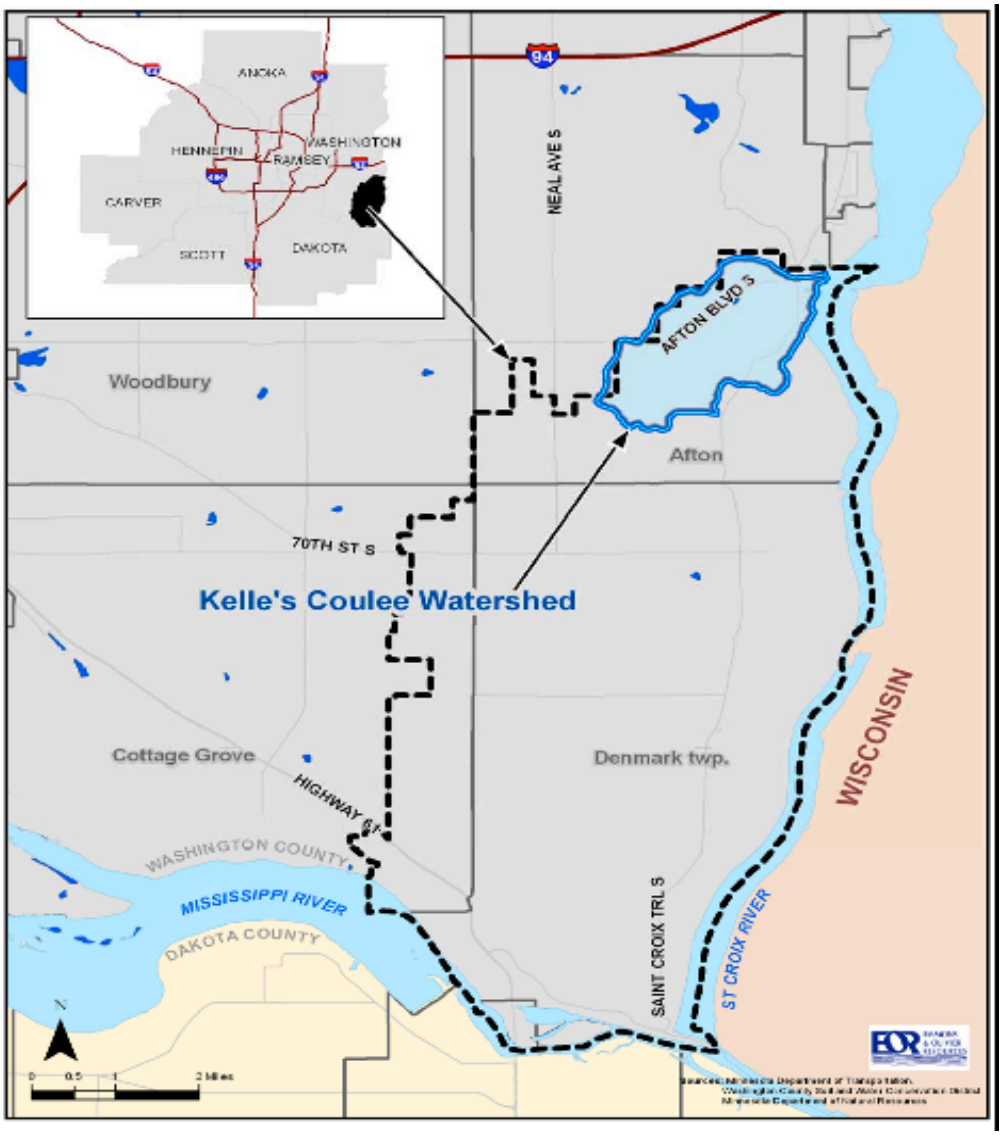

Fig. 3[38]

[38] Emmons and Olivier Resources, Inc., 6.

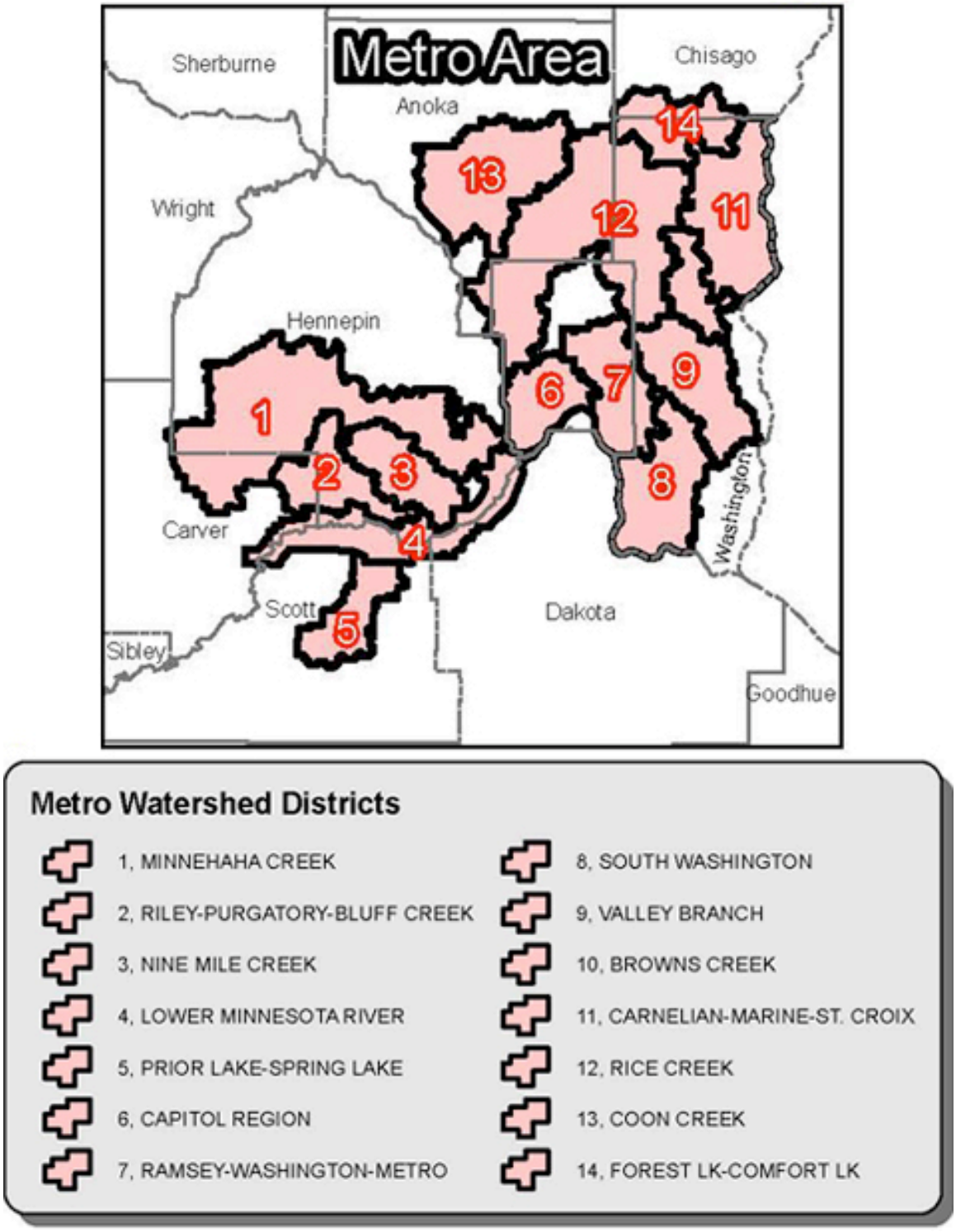

Fig. 4[39]

[39] http://www.mnwatershed.org/index.asp?Type=B_BASIC&SEC={D2F10412-CF57-45F8-B6D0-6DF55C8A1608}

Afton Focus Group: Demographic survey

9 participants (1 husband/wife pair - combined statistics e.g. household income reported together)

Gender
Female 11111
Male 1111
Age
18 to 24 years
25 to 34 years
35 to 44 years 1
45 to 54 years 1
55 to 64 years 111111
65 years and over 1
Household Income
Under $25,000
$25,000 to less than $50,000
$50,000 to less than $75,000 111
$75,000 to less than $100,000 1
$100,000 to less than $150,000 1
$150,000 to less than $200,000
$200,000 to less than $250,000 1
$250,000 or more 11
Education Level (check highest level of education completed)
No high school diploma
High School
Technical/Vocational School
Associates degree/2 Years College 1
Bachelor's degree/ 4 Years College 11
Masters or higher 111111
How long have you lived in the County?
Less Than 2 Years
2 To 5 Years 1
6 To 10 Years
11 To 15 Years 1
16 To 20 Years 1
Over 20 Years 11111
Do you receive income from your land?
No 111111
Yes
If yes, what percent?
0-25% 1
25-50% 1
50-75%
75-100%

Do you own your land?
All = YES
Do you live primarily on your land or lease it to renters?

Live on land	111111
Lease to renters	1
Both	1

Scandia Focus Group: Demographic survey

4 participants (1 non-related pair - separate statistics)

Gender
Female 11
Male 11
Age
18 to 24 years
25 to 34 years
35 to 44 years
45 to 54 years 1
55 to 64 years 111
65 years and over
Household Income (three responses)
Under $25,000
$25,000 to less than $50,000 1
$50,000 to less than $75,000
$75,000 to less than $100,000
$100,000 to less than $150,000 11
$150,000 to less than $200,000
$200,000 to less than $250,000
$250,000 or more
Education Level (check highest level of education completed)
No high school diploma
High School
Technical/Vocational School
Associates degree/2 Years College 1
Bachelor's degree/ 4 Years College 11
Masters or higher 1
How long have you lived in the County? (three responses)
Less Than 2 Years
2 To 5 Years
6 To 10 Years
11 To 15 Years
16 To 20 Years
Over 20 Years 111
Do you receive income from your land?
No
Yes 1
If yes, what percent?
0-25%
25-50%
50-75%
75-100% 1
Do you own your land?

All = YES

Do you live primarily on your land or lease it to renters?

Live on land	1
Lease to renters	1
Neither	11

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